FOCUSED SITE INSPECTION PRIORITIZATION
SITE EVALUATION REPORT

NATIONAL DSPL #1
2424 W. CLARKE STREET
PEORIA, ILLINOIS

CERCLIS ID NO.: ILD980901581

Prepared for:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
SITE ASSESSMENT SECTION
77 West Jackson Boulevard
Chicago, Illinois 60604

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Contract No.:	68-W0-0037
Technical Direction Document No.:	T05-9506-216
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1. INTRODUCTION

The Ecology and Environment, Inc. (E & E), Technical Assistance Team (TAT) was assigned by the United States Environmental Protection Agency (U.S. EPA), under Contract No. 68-W0-0037, Technical Direction Document (TDD) No. T05-9506-216, to evaluate the National Disposal #1 (ND1) Site in Peoria, Peoria County, Illinois as a potential candidate for the National Priorities List (NPL). E & E performed Focused Site Inspection Prioritization (FSIP) activities to determine whether, or to what extent, the site poses a threat to human health and the environment, and has prepared this FSIP report. The report presents the results of E & E's evaluation and summarizes the site conditions and targets pertinent to the migration and exposure pathways associated with the site. Background information was obtained from the 1986 E & E Field Investigation Team (FIT) Screening Site Inspection (SSI) report, Illinois Environmental Protection Agency (IEPA) file information, and conversations with IEPA representatives.

This report is organized into six sections, including this introduction. Section 2 describes the site and provides a brief site history. Section 3 provides information about previous investigations conducted at the site. Section 4 provides information about the four migration and exposure pathways (groundwater migration, surface water migration, soil exposure, and air migration). Section 5 is a summary of the FSIP. References used in the preparation of this report are listed in Section 6.

2. SITE DESCRIPTION AND HISTORY

2.1 SITE DESCRIPTION

The ND1 site is a closed municipal waste landfill located on Clarke Street, southeast of State Highway 24, in Peoria, Peoria County, Illinois (Sec. 19, T. 25 N, R. 8 E). Coordinates for the site are latitude 40°39'45" North and longitude 89°36'40" West (IEPA 1974a). The site covers approximately 80 acres and is bordered to the north by Clarke Street, to the west by a rail line, to the south by Kickapoo Creek, and to the east by the National Disposal Site #2 (United States Geological Survey [USGS] 1967; IEPA 1985). See Figure 2-1 for site location.

The site includes an inactive landfill area, an automobile shredder facility, and a stabilized creek bank area. See Figure 2-2 for site features.

The inactive landfill area covers 55 acres on the south side of the site (IEPA 1974a). The landfill was established on level ground and was built up to approximately 20 feet above the grade of the Kickapoo Creek (Conestoga-Rovers and Associates [CRA] 1994). File information indicates that the landfill was not lined and was not equipped with a leachate collection system. Operations at the landfill involved spreading and compaction of refuse with dozers and scrapers; and placement of a daily cover over compacted refuse (IEPA 1974a). Closure methods employed in the early 1970s generally involved a final compacted two-foot thick cover of unspecified clean fill compacted to promote proper drainage (Clark 1971). No monitoring wells are known to have been constructed at the site.

The automobile shredder facility is located in a fenced area north of the former landfill and covers approximately 20 acres. An associated storage yard for raw materials covers an additional 50-acre area which covers portions of the former landfill (United States Department of Agriculture [USDA] 1992). Operations at the facility involve shredding automobiles and separation of the shredded materials for off-site use (E & E 1986; Jones 1995a).

The stabilized bank area is a 480 foot long by 20 feet high section along the bank of the Kickapoo Creek where landfilled material had become exposed following the 1974 closure. Recent construction has created a stabilized bank to contain landfilled material and prevent further erosion (Wheby 1995). A copy of the Certificate of Completion for this remedial construction is provided in Appendix A. The stabilized bank includes beds of clay, crushed rock, filter fabric, and rip rap at a 1.7:1 slope (CRA 1994). Further description of the stabilized bank is provided in Appendix B. Remedial work began in September 1994 (Jones 1994), and was completed in July 1995 (Jones 1995a). Oversight of the remedial activities has been conducted by the IEPA Department of Land Pollution Control in Peoria, Illinois (Jones 1995b).

Surface water runoff is not contained on site or directed toward a specific point of discharge, in general runoff flows toward the perimeter of the site (Roth 1995; Sherman 1995)

The site is located in an industrial area on the south side of Peoria. Nearby developments include the Greater Peoria Sanitary District wastewater treatment plant, the Keystone Steel and Wire Company, Celotex, the Commercial Solvents Company, and a number of other industries and railroad terminals. A second landfill, referred to as National Disposal #2 (ILD056752371) is located directly east of the site (IEPA 1985; USGS 1967).

The nearest residential area is located approximately 0.2 miles north and is separated from the site by several rail lines and State Highway 24 (USGS 1967). Residents of Peoria and Bartonville are served by the Illinois American Water Company (IAW) system which is supplied by groundwater and surface water. The nearest IAW well is located approximately 1.3 miles northeast of the site. The IAW surface water intake is located on the Illinois River and does not receive drainage from the site (Gregory 1995). Both Kickapoo Creek and the Illinois River are used for recreational fishing (Newman 1995), and wetland habitats are located along the banks of both streams (United States Department of the Interior [USDI] 1988).

2.2 SITE HISTORY

The site was owned by the Peoria and Pekin Union Railway Company and leased to the National Disposal Company during the years of operation. The site was sold to the I. Bork and Sons Company in 1974 (E & E 1986) and was subsequently sold to IBS Incorporated (IBS, Inc.) in 1982 (Sherman 1995).

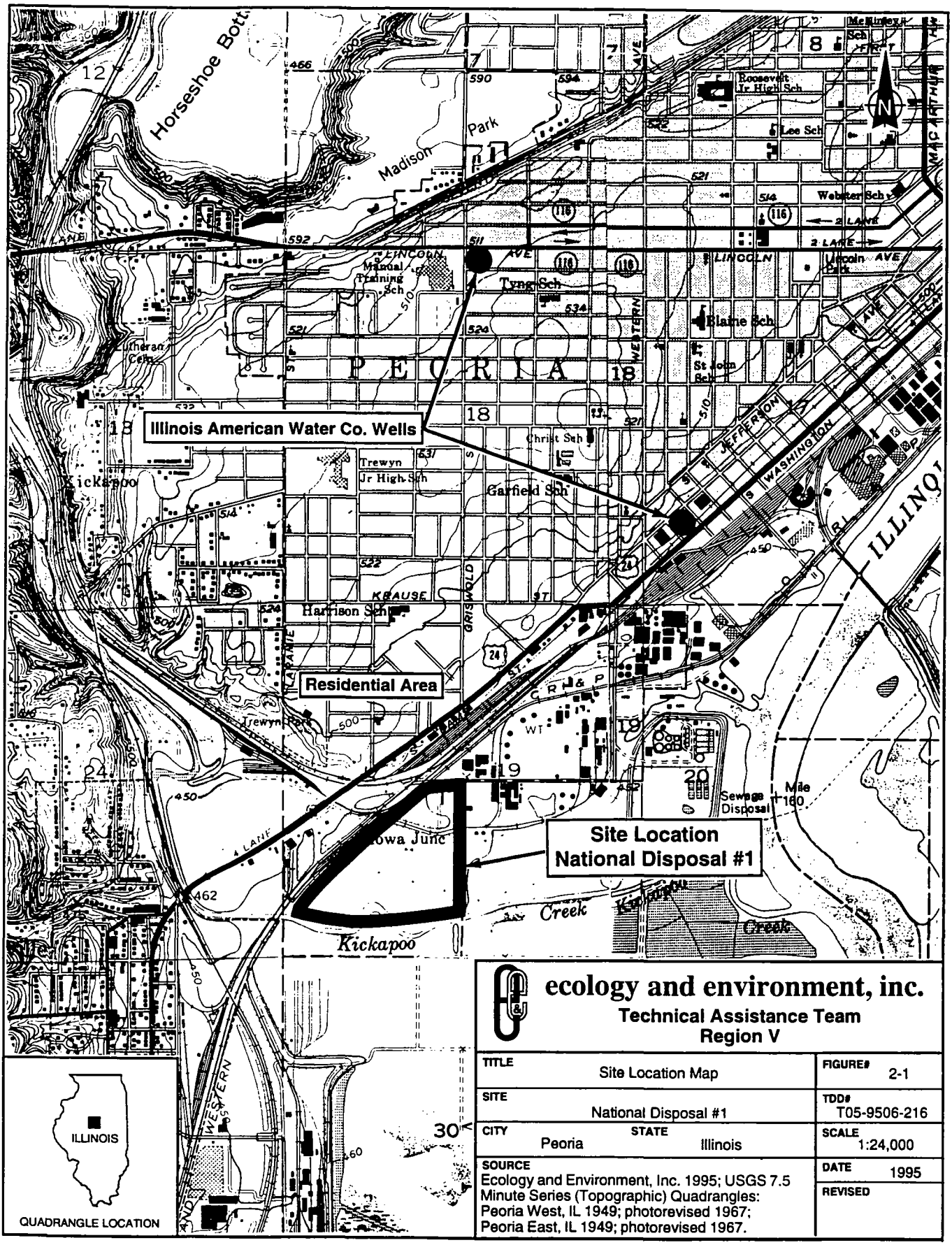
The landfill accepted municipal waste between 1955 and 1974. Details on the sources of waste disposed are not available. Disposal of hazardous waste at the site was never documented; however, the proximity of industrial developments suggests that industrial wastes may have been disposed at the site (E & E 1986). The landfill was registered with the State of Illinois Department of Public Health (IDPH) as a sanitary landfill in 1969 (IDPH 1969). An operating permit was never issued, however the landfill was subject to inspection by IEPA beginning in 1971 and continuing through closure in 1974 (Clark 1971; IEPA 1974b). In 1983, IEPA inspected the site and determined that the 1974 closure was inadequate based on observation of severe erosion on the south side of the site, adjacent to Kickapoo Creek (Savage 1983).

Following closure of the landfill an automobile shredder and metal recycling operation was established over the landfill area and in areas to the north and east (E & E 1986). In 1981, IEPA received a report that polychlorinated biphenyl (PCB) oil was being released on site as a result of reclaiming metal from electrical transformers. IEPA collected two surface soil samples near a group of transformers and detected PCBs in one sample. Information available indicates that the transformers were located on the north central area of the site (Steele 1981), however no information on the number of transformers on site, the suspected areal extent of contamination, or analytical results of the second sample area is available. Transformers have not been processed at the facility since 1982 (Sherman 1995).

File information also indicates that waste shredded materials were used as a base material for access paths on site (Jansen 1983). No violations were issued in response to these events according to information available. Currently, IBS does not generate any hazardous waste and the waste shredder material is handled by Waste Management, Inc. (Roth 1995).

Repair of the eroded area along Kickapoo Creek was delayed by questions and disputes over land ownership and responsibility. Parties involved in the remedial measures included the Clarke Land Company (Clarke Land Co.), which represents Browning Ferris

Industries (formerly the National Disposal Company) and IBS, Inc. (operator of the automobile shredder and current property owner); and the Atchinson, Topeka, and Santa Fe (Santa Fe) Railroad Company, which owned certain areas of the site. Ultimately, the remedial measures were performed by Conestoga Rovers and Associates under contract to the Clarke Land Co., and Santa Fe (Jones 1994).



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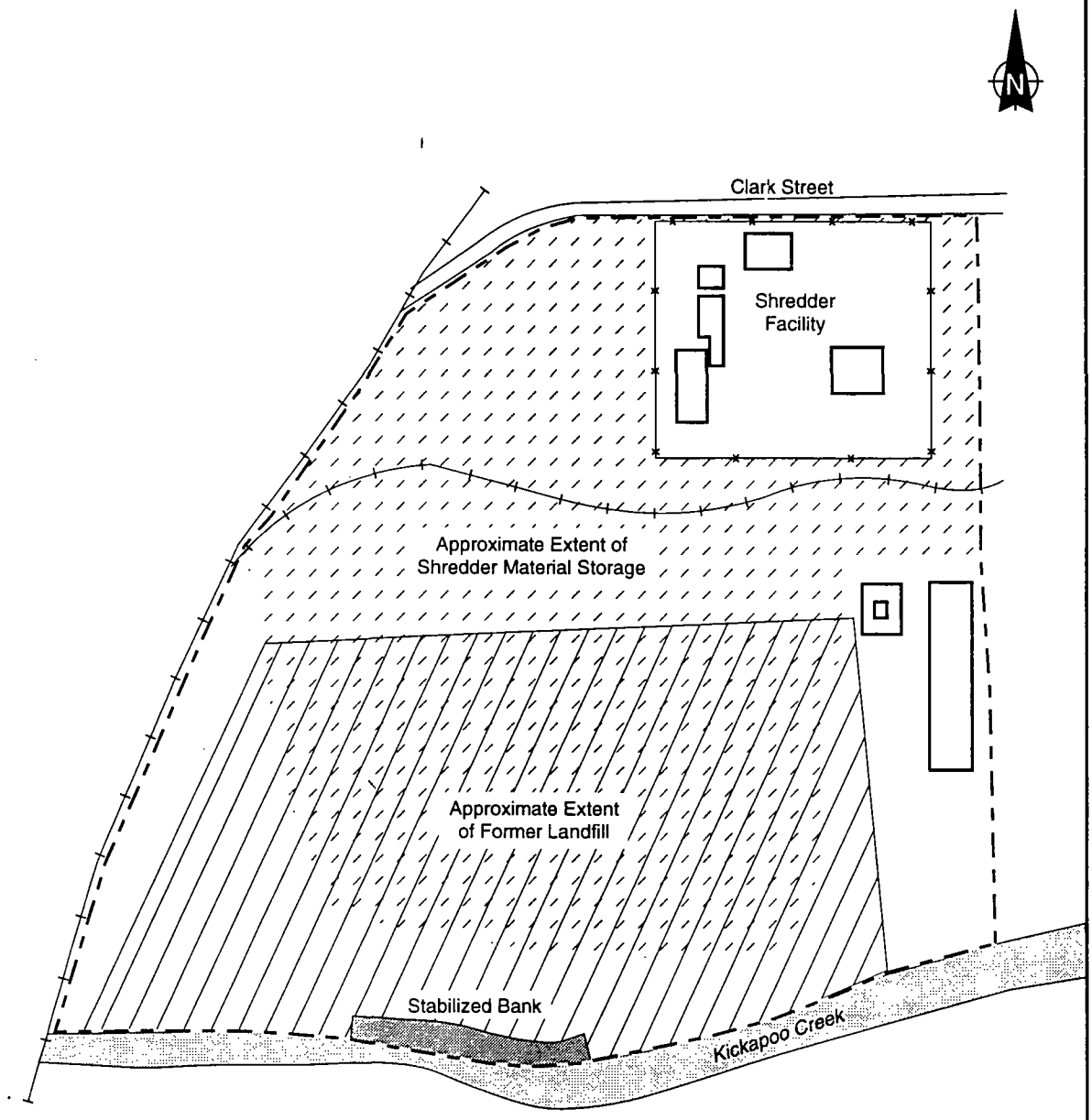
Technical Assistance Team
Region V

TITLE: Site Location Map	FIGURE#: 2-1
SITE: National Disposal #1	TDD#: T05-9506-216
CITY: Peoria STATE: Illinois	SCALE: 1:24,000
SOURCE: Ecology and Environment, Inc. 1995; USGS 7.5 Minute Series (Topographic) Quadrangles: Peoria West, IL 1949; photorevised 1967; Peoria East, IL 1949; photorevised 1967.	DATE: 1995
	REVISED:

02: TAT\ZT305150.CDR



Legend
- Site Boundary
- Railroad
- Fence
- Building

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Region V

TITLE	Site Features Map	FIGURE# 2-2
SITE	National Disposal #1	TDD# T05-9506-216
CITY	Peoria STATE Illinois	SCALE Not to Scale
SOURCE	Ecology and Environment, Inc. 1987 SSI Report; CSA, 1994 Design Report, Kickapoo Creek Bank Repair	DATE 1995 REVISED

3. PREVIOUS INVESTIGATIONS

On January 11, 1985, IEPA completed a Preliminary Assessment (PA) Report for the site. The PA was based on previous sampling and inspections of the site and did not include a site reconnaissance or additional sampling. IEPA concluded that the site presented a threat to local groundwater and surface water resources based on the proximity of Kickapoo Creek and IAW municipal wells (IEPA 1985).

On September 26, 1986, E & E FIT completed a screening site inspection (SSI) of the site. The SSI included collection of 5 samples located as follows:

- One upstream sediment sample from Kickapoo Creek, collected near the I-474 overpass.
- Three surface soil samples collected from the area of the landfill which had been eroded by Kickapoo Creek.
- One downstream sediment sample collected from Kickapoo Creek at the east end of the site.

The samples were analyzed for the full Target Analyte List and Target Compound List (TAL/TCL) chemicals. No TAL/TCL compounds were detected at levels above the upstream sediment (background) sample. Refer to Appendix C for a copy of the SSI sample location map and analytical results (E & E 1986).

IEPA conducted a number of inspections subsequent to the SSI related to the assessment of the eroded bank. The majority of these inspections involved visual observation of the site and resulted in issuance of notices of violation to Browning Ferris Industries (Svboda 1993), and IBS (Jones 1993). On March 31, 1994, five months prior to the beginning of remedial construction, an IEPA inspector collected a soil sample from a leachate seep on the eroded slope. The sample were analyzed for semi-volatile compounds using the Toxicity Characteristics Leaching Procedure (TCLP) and was found to be non-hazardous (Jones 1994).

Construction of the stabilized creek bank began in September 1994, and was completed in July 1995 (Jones 1995b; Wheby 1995).

4. MIGRATION AND EXPOSURE PATHWAYS

This section describes the four migration and exposure pathways associated with the ND1 site. Section 4.1 discusses the groundwater migration pathway; Section 4.2 discusses the surface water migration pathway; Section 4.3 discusses the soil exposure pathway; and Section 4.4 discusses the air migration pathway.

4.1 GROUNDWATER MIGRATION PATHWAY

This section discusses regional and site-specific geology and soils, groundwater releases, and targets associated with the groundwater migration pathway at the site.

4.1.1 Geology and Soils

The site is underlain by alluvial deposits consisting of beds of silty clay and sandy silty clay extending approximately 20 to 25 feet below ground surface (BGS), according to drilling records for a nearby property (Koster 1972). Beneath the alluvial deposits are glacial deposits consisting of highly permeable sands and till extending to between 150 and 200 feet BGS (E & E 1986). These glacial deposits form a highly productive aquifer which is developed as a source of drinking and industrial water in the study area. Coal and shale formations make up the bedrock which underlies the area (Koster 1972). A prominent outcrop of sandstone is located 0.4 miles west of the site. The top of this outcrop is approximately 200 feet above the elevation of the site (E & E 1986; USGS 1967).

The water table is encountered within the glacial deposits, beneath the alluvial deposits, at approximately 20 to 30 feet BGS according to records of nearby wells (Koster 1972). Groundwater in the glacial aquifer is expected to flow east, toward the Illinois River; however, this could be influenced by pumping of the aquifer by nearby industrial and municipal wells located generally north of the site (USGS 1967; Koster 1972).

4.1.2 Groundwater Releases

A release to groundwater has not been documented at the site, and in general groundwater has not been a concern during past investigations and no monitoring wells have been installed on site. The site presents a potential release to groundwater based on the absence of an engineered liner or leachate collection system, and the absence of an engineered clay cap over the majority of the landfill. No groundwater samples were collected during the 1986 E & E SSI or other past investigations.

4.1.3 Targets

The IAW serves approximately 143,000 residents of Peoria and surrounding communities including Bartonville. IAW obtains approximately 10 million gallons of water per day (MGD) from an intake located on the Illinois River approximately six miles upstream of the confluence with Kickapoo Creek. IAW also obtains approximately 12 MGD from wells located within the four-mile radius study area and 6 MGD from wells located outside the four-mile radius study area. Water obtained from these sources is not mixed prior to distribution (Gregory 1995; USGS 1967).

Three municipal wells are located at the intersection of Dodge and Washington Streets, 1.3 mile northeast of the site. These wells are finished between 118 and 122 feet BGS and provide a combined total of 8 MGD. Two municipal wells are located near the intersection of Lincoln and Griswald Streets, 1.8 miles north of the site; both wells are finished 162 feet BGS and provide a combined total of 4 MGD. IAW has not recently exceeded Safe Drinking Water Act limits in the nearby wells (Gregory 1995). File information does not indicate the presence of private residential wells in the site vicinity.

4.2 SURFACE WATER MIGRATION PATHWAY

Runoff is not collected on site or directed to a specific point of discharge according to representatives of IBS, Inc. Runoff from the auto shredder facility and other areas north of the rail line which divides the site is collected within a storm sewer on Clarke Street (Roth 1995; E & E 1986; USGS 1967). Information available on site topography suggests that runoff from the closed landfill flows radially (CRA 1994; E & E 1986) and is collected along rail lines on the west side of the site, or along low spots on the east side of the site. (Sherman 1995; USDA 1992). Available information on site topography suggests that runoff from the

site could enter Kickapoo Creek in the areas to the west and east of the former landfill; however, specific points of entry cannot be identified (USGS 1967; E & E 1986).

Kickapoo Creek is located adjacent to the south side of the site. The Creek drains upland rural areas and small towns west of the site and has a mean discharge of 161 cubic feet per second (CFS). The creek drains into the Illinois River one mile east of the site. The Illinois River drains urban and agricultural areas in north central Illinois and has an average discharge of approximately 20,000 CFS near Peoria (USGS 1967; 1991).

Both streams are used extensively for recreational fishing according to IEPA (Newman 1995). Wetland habitats occur along the banks of both streams. A five-acre wetland area is located immediately south of the site. Also, a significant wetland area occurs at the confluence of the two Kickapoo Creek and Illinois River and continues over one mile south along the west bank of the Illinois River. These wetlands are classified as impounded palustrine forested wetlands with broad-leafed deciduous vegetation (USDI 1988). Water levels in the wetlands are affected by the Peoria lock and dam (USDI 1988).

Portions of the landfill were formerly located in the floodplain of the Kickapoo Creek. Flooding in 1993 was responsible for a significant cut into the landfill area. The stabilized bank was designed to withstand flow velocities resulting from a 100-year flood (CRA 1994).

Sediment samples collected upstream and downstream of the site indicate that TAL/TCL compounds have not been released to the creek (E & E 1986). The general description of the location of the 1981 IEPA soil sample which contained 76 mg/kg PCB as being on the north central side of the site suggests that PCB-laden runoff may have entered the city storm sewer (Steele 1981; Roth 1995).

4.3 SOIL EXPOSURE PATHWAY

The former landfill was closed and covered in 1974, and was subsequently developed as a automobile shredder facility (E & E 1986). PCBs were detected in a soil sample collected near a small pile of electrical equipment in 1981 (Steele 1981), and shredder waste was deposited on site between 1975 and 1983. The extent of PCB contamination and the impact of shredder waste application on surface soils at the site is unknown. Sediment and soil samples collected by E & E FIT in 1986 near the bank of Kickapoo Creek did not contain PCBs or other TAL/TCL chemicals above background (E & E 1986).

The Automobile Shredder facility is surrounded by a locking fence, the shredder material storage area (Roth 1995) and former landfill area are not fenced (E & E 1986).

All development within 200 feet of the site in industrial, the nearest residences are located 0.2 miles north and are separated from the site by rail lines and State Highway 24. Approximately 10 acres of wetlands occur with 0.25 mile of the site and 120 acres occur between 0.5 and 1 mile from the site (USGS 1967; USDI 1988). Approximately 68 persons work on site (Roth 1995).

4.4 AIR MIGRATION PATHWAY

The landfill has not been equipped with a gas venting system according to information available. No air samples were collected during the SSI. According to representatives of IEPA, IBS currently retains air quality permit number 89110029 for operation of the automobile shredder and has not had any permit violations within the last three years (Kahila 1995).

5. SUMMARY

The National Disposal #1 (ND1) site is a closed 55-acre landfill and active 80-acre automobile shredder facility which is located in an industrial area on the south side of Peoria, Illinois. No hazardous waste is known to have been disposed in the landfill. PCBs were detected in one surface soil sample collected by IEPA in 1981 and waste shredder material was deposited on site between 1975 and 1983; the impact and extent of PCBs and shredder waste in surface soil at the site is unknown. Currently, the shredder facility does not generate hazardous waste, and holds an air quality permit for shredder operations. Shredder waste is disposed off site and PCB-laden electrical equipment is no longer processed.

The landfill was active between 1955 and 1974. In 1983, IEPA noticed that a portion of the landfill along Kickapoo Creek had eroded and was releasing refuse and leachate into the creek. In 1986, E & E collected soil samples along the eroded bank of Kickapoo Creek and sediment samples downstream of the site. The samples did not contain TAL/TCL chemicals above background. Construction of a stabilized bank to contain landfilled material and prevent further erosion was completed in July 1995.

The site is located in an industrial area, south of the residential areas of Peoria. The nearest residence is 0.2 miles north of the site across a highway and rail lines; the automobile shredder is partially fenced to prevent trespass. Residents of Peoria receive potable water from the Illinois American Water Company which is supplied water by a system of wells and a surface water intake. The nearest municipal wells are located 1.3 miles north of the site. No residential wells are located near the site. Nearby surface water bodies include Kickapoo Creek and the Illinois River. Both are used for recreational fishing and provide wetland habitats.

6. REFERENCES

References not included in Appendix D: documents that are currently available within U.S. EPA files; copyrighted documents that are currently available in E & E's library; maps produced by either the United States Geologic Survey or the Illinois State Geologic Survey; and documents that are created by the various state agencies for public use.

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_____, *1967, 7.5 Minute Series Topographic Maps: Peoria East Illinois; Peoria West, Illinois; Pekin, Illinois; Marquette Heights, Illinois Quadrangles.* Reston, Virginia.

Wheby, Frank, July 19, 1995, Registered Professional Engineer 21591, *Certificate of Completion in the matter of State of Illinois v. IBS, Inc., et al.*, Evanston, Illinois

APPENDIX A
1995 CERTIFICATE OF COMPLETION

FRANK T. WHEBY

1830 SHERMAN AVENUE • EVANSTON, ILLINOIS 60201
Telephone: (708) 866-8866 FAX: (708) 869-7766

In individual practice of civil and geotechnical engineering

July 19, 1995

Mr. Todd Wiener
McDermott, Will and Emery
227 West Monroe Street, #3100
Chicago, Illinois 60606-5096

SUBJECT: CLARKE LAND COMPANY
Certificate of Completion

Dear Mr. Weiner:

I hereby certify that the erosion control work performed on the Clarke Land Company property and the adjacent "orphan" parcel has been performed and completed in accordance with the Compliance Plan set forth in Section VII, Paragraph 3 of the Partial Consent Order entered into by Clarke Land Company in the matter of State of Illinois v IBS, Inc., et al, with the exception that the revegitation of the tableland at the shoulder of the treated slope has not yet been, and can not be, done at the present time. This remaining work, the scope of which is considered to be incidental to that of the erosion control work, is scheduled to be accomplished when the weather permits it to be done successfully, in October of the present year.

Sincerely yours,

FRANK T. WHEBY, P. E.

21591 REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

Copies to: Mr. Walter L. Roth, IBS, Lake Bluff
Mr. Robert Roth, IBS, Peoria
Mr. Roger Sherman, IBS, Lake Bluff

Post-it® Fax Note 7671	Date 7-21	# of pages ▶ 9
To TODD WIENER	From ROGER SHERMAN	
Co./Dept.	Co.	
Phone #	Phone # 708 615 1020	
Fax #	Fax # X 103	

APPENDIX B

1994 DETAILED DESIGN REPORT
KICKAPOO CREEK BANK REPAIR PLAN

DETAILED DESIGN REPORT
KICKAPOO CREEK BANK REPAIR

PREPARED FOR
BROWNING FERRIS INDUSTRIES OF ILLINOIS,
CLARKE LAND COMPANY AND
THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY

JULY 1994

REF. NO. 4310 (9)

CONESTOGA-ROVERS & ASSOCIATES

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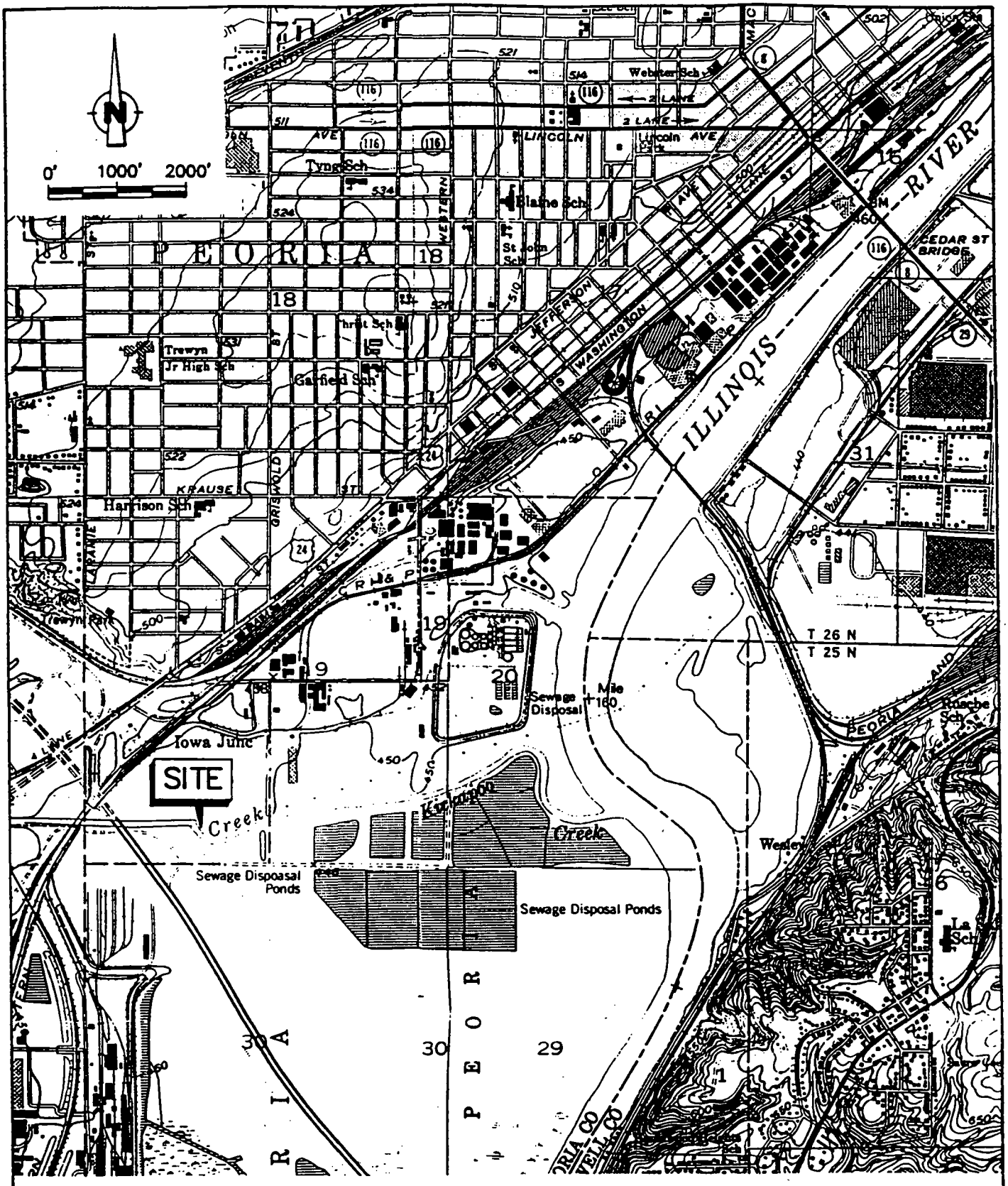
1.0 BACKGROUND

The Site in question is a 480-foot section of the bank of the Kickapoo Creek in the City of Peoria, Illinois. The location of this section of the creek is shown in Figure 1.1. This section of the creek abuts a closed landfill formerly known as National Disposal #1. For most of its length, Kickapoo Creek is straight, but in the area of the landfill a sharp bend occurs. Subsequent to the closure of the landfill, the banks of the Kickapoo Creek were shifted and straightened during the construction of a freeway bridge. In addition to the realignment of the stream bed, the channel was lined with concrete to a point approximately 100 feet upstream of the Site. This shift and change in the hydraulic regime of the stream bed has resulted an exaggeration in the existing bend in the stream bed. Because of the tendency of any flowing water to flow faster on the outside of a curve or bend, the potential for erosion was increased by these changes.

By 1993, the hydraulic situation resulted in sufficient erosion of the stream bank to expose waste that had been buried during the operation of the landfill. A repair of the bank was proposed by the previous landfill operator and the affected landowners. Before repair could be performed, the extended flood period of 1993 occurred. During this extended period of high flows, the stream has eroded an additional 30 feet into the bank of the outside of the bend and the landfill. Figures 1.2 and 1.3 show the topography in the spring of 1993 and a typical cross-section of Kickapoo Creek at the most extreme exposed portion of the landfill. Figure 1.2 also shows the location of the stream bank in 1994 after the flooding.

The purpose of this detailed design report is to present a proposed repair to the landfill cover and adjacent stream bank that will provide long-term protection from erosion.

This detailed design report is based on the previously submitted design approved by the Illinois Environmental Protection Agency (IEPA) and includes responses to subsequent comments and questions from the Illinois Office of the Attorney General.



SOURCE: USGS QUADRANGLE MAPS
PEORIA EAST AND PEORIA WEST, ILLINOIS

figure 1.1
SITE LOCATION
IBS SITE
Peoria, Illinois

CRA recycled paper ILLINOIS
ecology and environment

4310-14/11/91-4-0

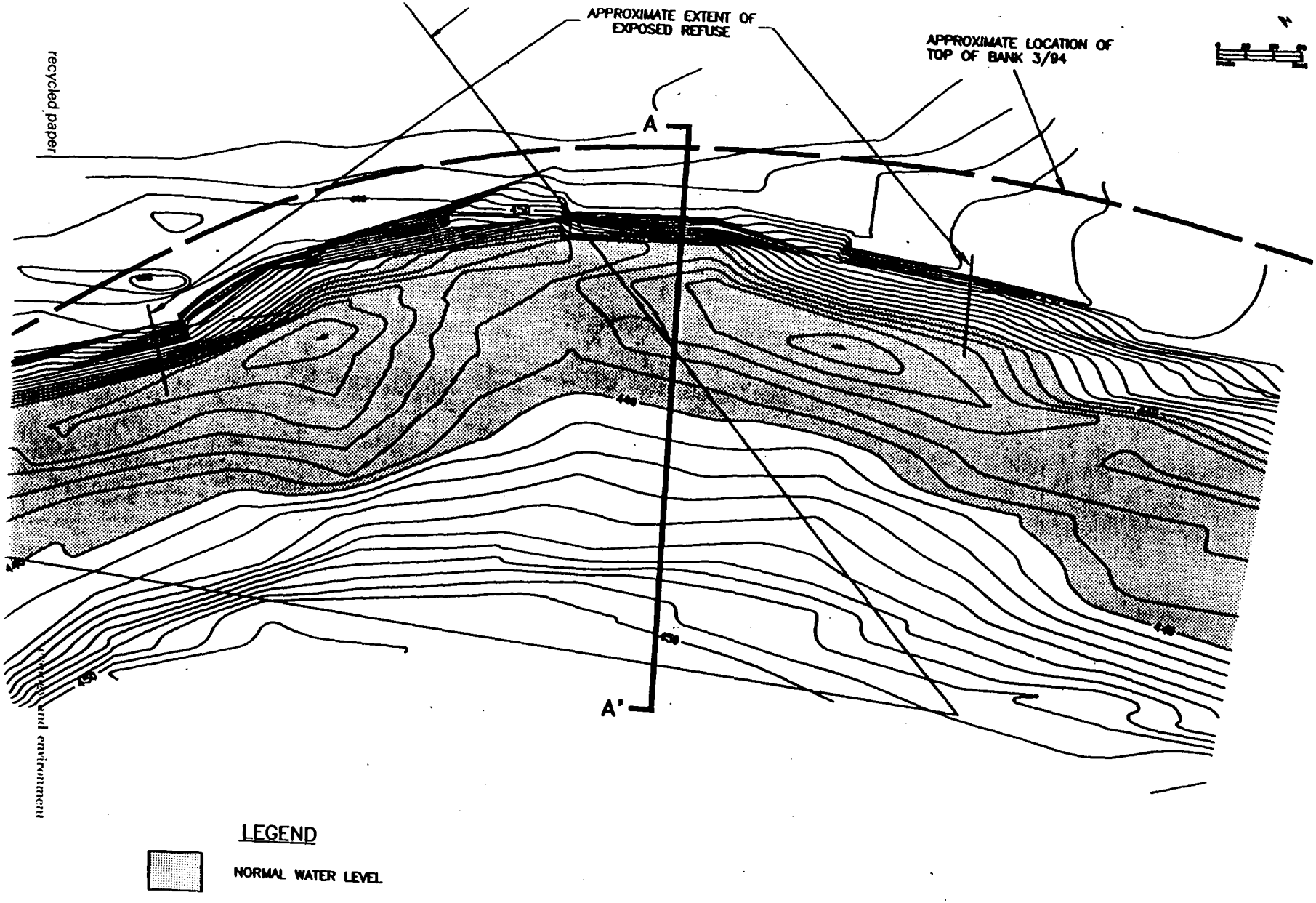


figure 1.2
1993 SITE CONDITIONS
Kickapoo Creek Bank Repair

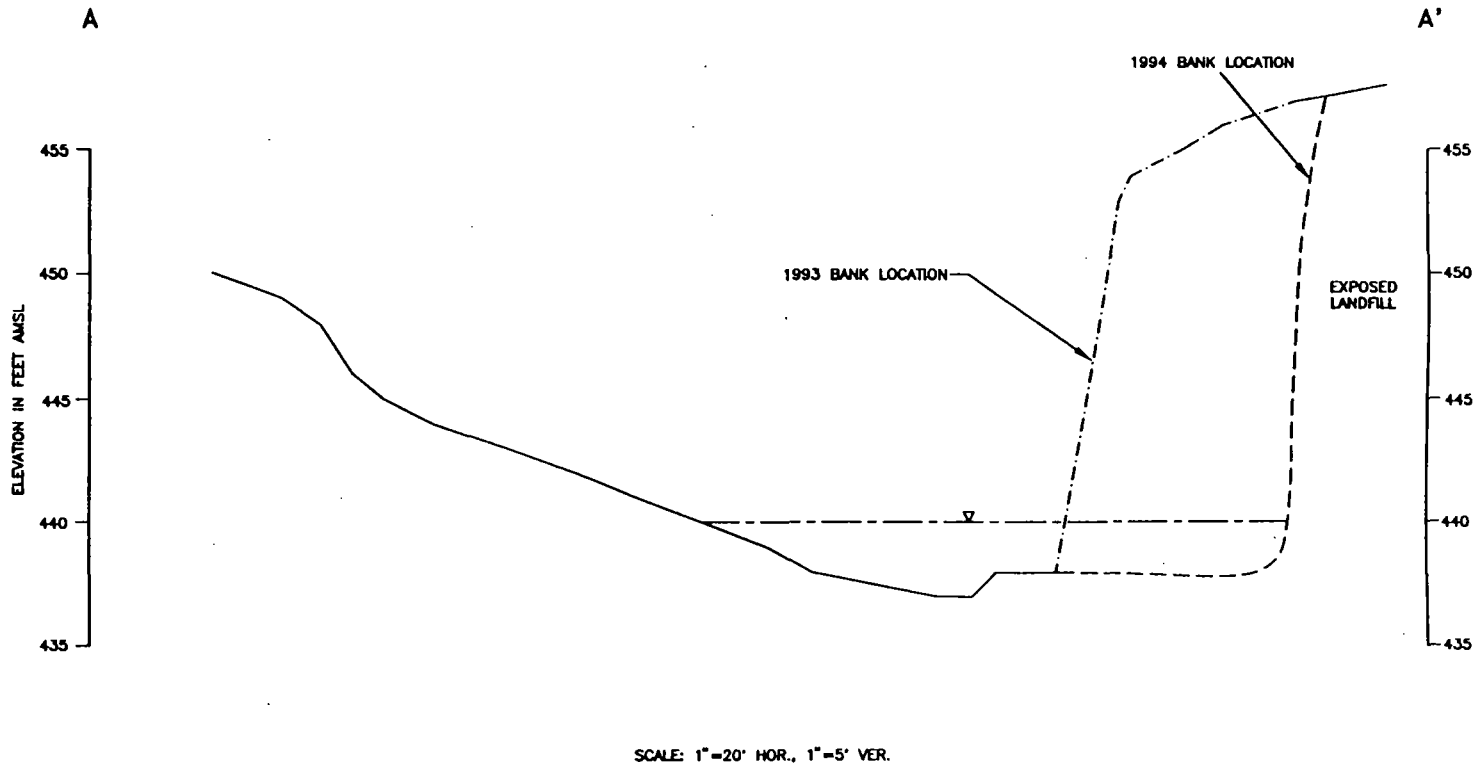


figure 1.3
TYPICAL CROSS SECTION
EXISTING CONDITIONS
Kickapoo Creek Bank Repair

CRA

2.0 HYDRAULICS

2.1 FLOOD FLOWS

Between 1980 and 1982, the Federal Emergency Management Agency (FEMA) conducted a flood insurance study on both the Illinois River and Kickapoo Creek. This study involved a technical analysis of the flood flows and flood elevation for various flood events. The findings of this study were published in the Flood Insurance Study for the City of Peoria, Illinois. 1980. A summary of the findings is given in Table 2.1.

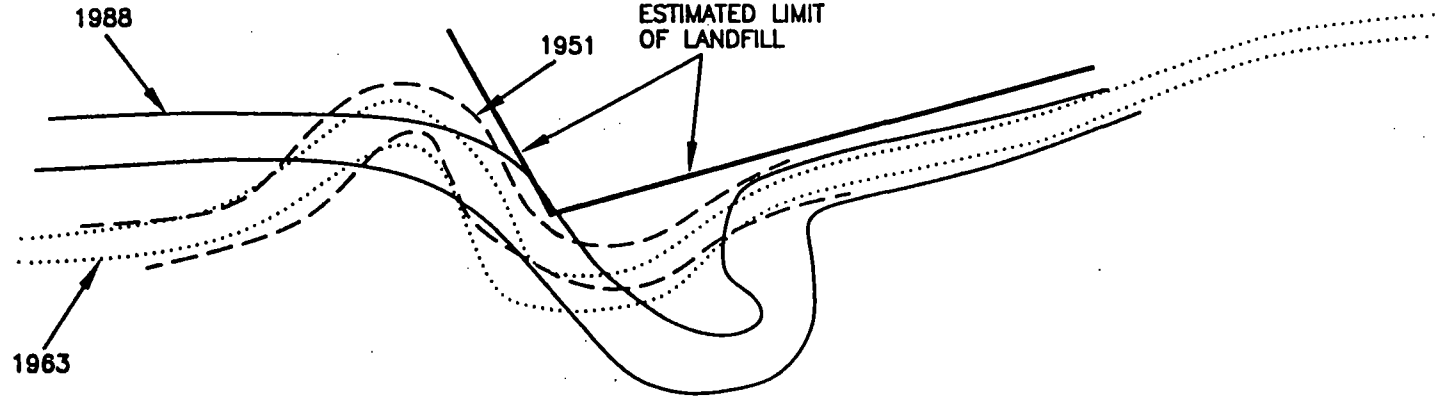
2.2 EROSION POTENTIAL

The effect of the major flood flows on the old landfill face is exacerbated by the velocity distribution in a bend of a stream. The highest velocity and greatest flow occur in the outside of a bend, while the velocity in the inside of the bend is often so low that sediment tends to drop out of suspension. The typical progression of a bend is to sharpen the curvature of the bend until an ox-bow is formed. This process can be observed in action at this Site. A review of existing aerial photos of this area clearly shows the progressive erosion in the bend. Figure 2.1 shows the change in the location of the stream bed over the past 30 years. The majority of the erosion occurred after the construction of the waterway in the 1970s. Without a repair, this pattern of erosion and oxbow formation will continue.

TABLE 2.1

KICKAPOO CREEK FLOOD INFORMATION

Flood Return Interval	*Discharge (cfs)*	*Elevation (feet above MSL)*	*Average Velocity (fps)*
10-year	16,000	452.0	5.0
50-year	24,100	456.2	5.7
100-year	27,600	458.5	5.9
500-year	34,700	461.8	6.3



1" =APPROX. 400'

figure 2.1
STREAM BED MIGRATION
KICKAPOO CREEK
Peoria, Illinois

CRA

3.0 PERMITS

The design proposed in this report will repair the landfill cover and stream bank at the Kickapoo Creek location. The Design will require a 404 permit from the U.S. Army Corps of Engineers. This work must also comply with the requirements of the IDOT/DWR for floodways/flood plains. Any filling or encroachment in a floodway must not cause an increase of greater than 0.1 foot in the 100-year flood level measured at the upstream boundary of the property. The proposed design will not increase the 1993 cross-sectional area of Kickapoo Creek since the repair will be conducted within the area eroded by the 1993 flood. Hence, compensating excavation in the opposite side of the stream bed will not be necessary to maintain the cross-sectional area and flood elevations in the floodway.

4.0 PROPOSED REPAIR DESIGN

4.1 CONSTRAINTS

The design presented herein should be:

1. Capable of withstanding flood velocities of 10 feet per second;

2. Capable of withstanding ice floe and tree stump impact; and

3. Able to accommodate any potential settlement of the refuse within the landfill.

4. Stabilize the stream bed and bank of Kickapoo Creek to control the further erosion of the stream bank.

4.2 DESIGN

CRA proposes to construct a riprap and geotextile armoring on the approximately 400-foot long exposed face of the landfill. The exposed waste, which now has a slope of much less than 1:1, would be covered with an imported clean silty clay fill.

Inspections of the fill have found little evidence of leachate. However, silty clay fill will be used as a precautionary measure. The use of a silty clay (greater than 50% passing or #200 sieve) will create a low-permeability barrier to prevent the movement of leachate (if present) into the repair section. The filling would begin at the existing bank to prevent unnecessary excavation of a closed landfill. The proposed filling would allow the construction of a stable 1.7:1 slope, while maintaining the required floodway area.

A slope stability analysis has been conducted for the proposed repair. This analysis indicated a Factor of Safety of between 4.6 and

5.1 against rotational failure for this degree of slope. A copy of the slope stability analysis is contained in Appendix A.

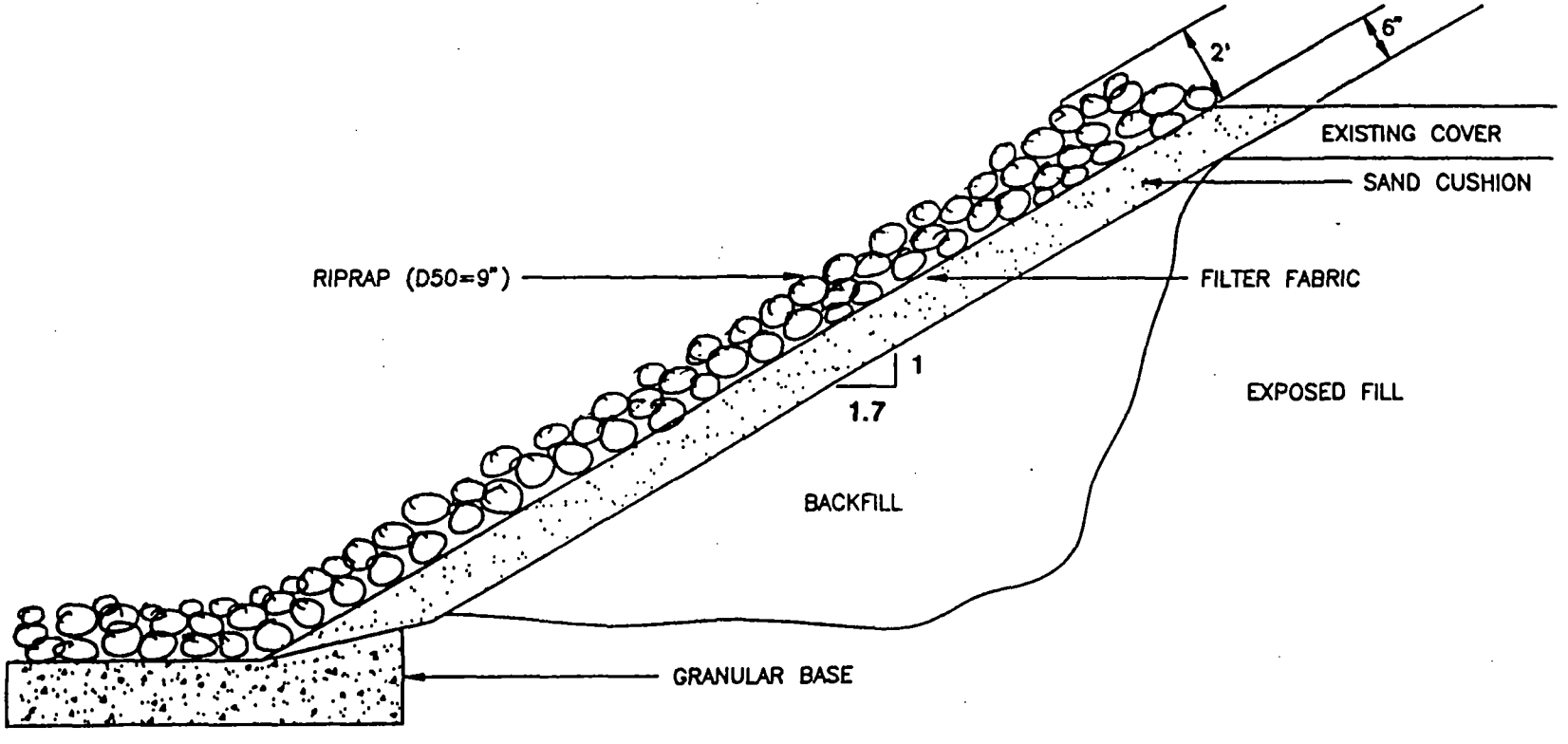
The design would also provide a minimum of 2 feet of cover over the exposed refuse. In the area of the bend in the stream bed, the imported fill material would be placed in 12-inch lifts and compacted to a minimum of 90% Standard Proctor density. A typical cross section is shown in Figure 4.1. The compacted fill will be faced with a 6-inch sand blanket, a filter fabric and riprap. The riprap (D_{50} = 9 inches) will be machine placed. This construction technique has been designed and has been demonstrated to provide protection from future flood waters. This riprap is sized to withstand the flow velocities anticipated during a 100-year flood. Figure 4.1 shows a typical cross section of the proposed repair.

In the 100-foot long section of eroded stream bank directly downstream of the landfill, the slope of the bank would transition to a minimum slope of 3:1. A 6-inch sand blanket would be placed on the regraded slope and covered with a filter fabric. The filter fabric would be covered with riprap to protect against further erosion. The balance of the bank downstream of the rip rap repair area to the end of the bend (approximately 100 feet) would be revegetated to resist erosion.

Figures 4.2 and 4.3 represent the same area after the proposed repair. Figure 4.2 shows the realigned stream bed with the areas of construction designated. Figure 4.3 shows the cross-section of Kickapoo Creek after the grading of the bank and placement of the geotextile matrix. As can be seen in this figure, the cross sectional area of the stream bed is at least as large as the pre-1993 stream bed.

4.3 SCHEDULE

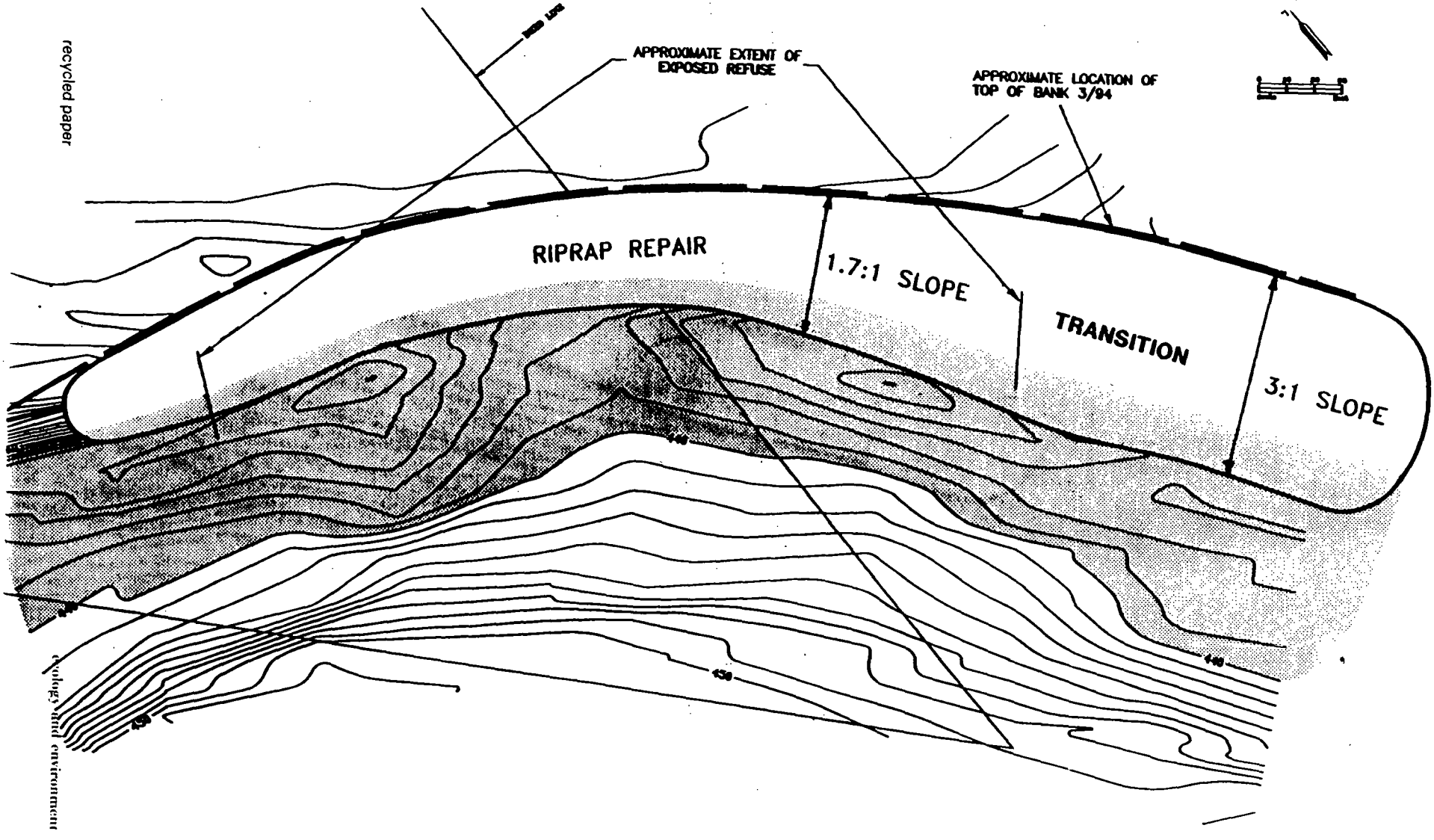
Construction will be timed to coincide with a period of low flow in Kickapoo Creek to minimize impacts on stream bed and water quality. The period of low flow typically begins in mid August and lasts



TYPICAL SECTION

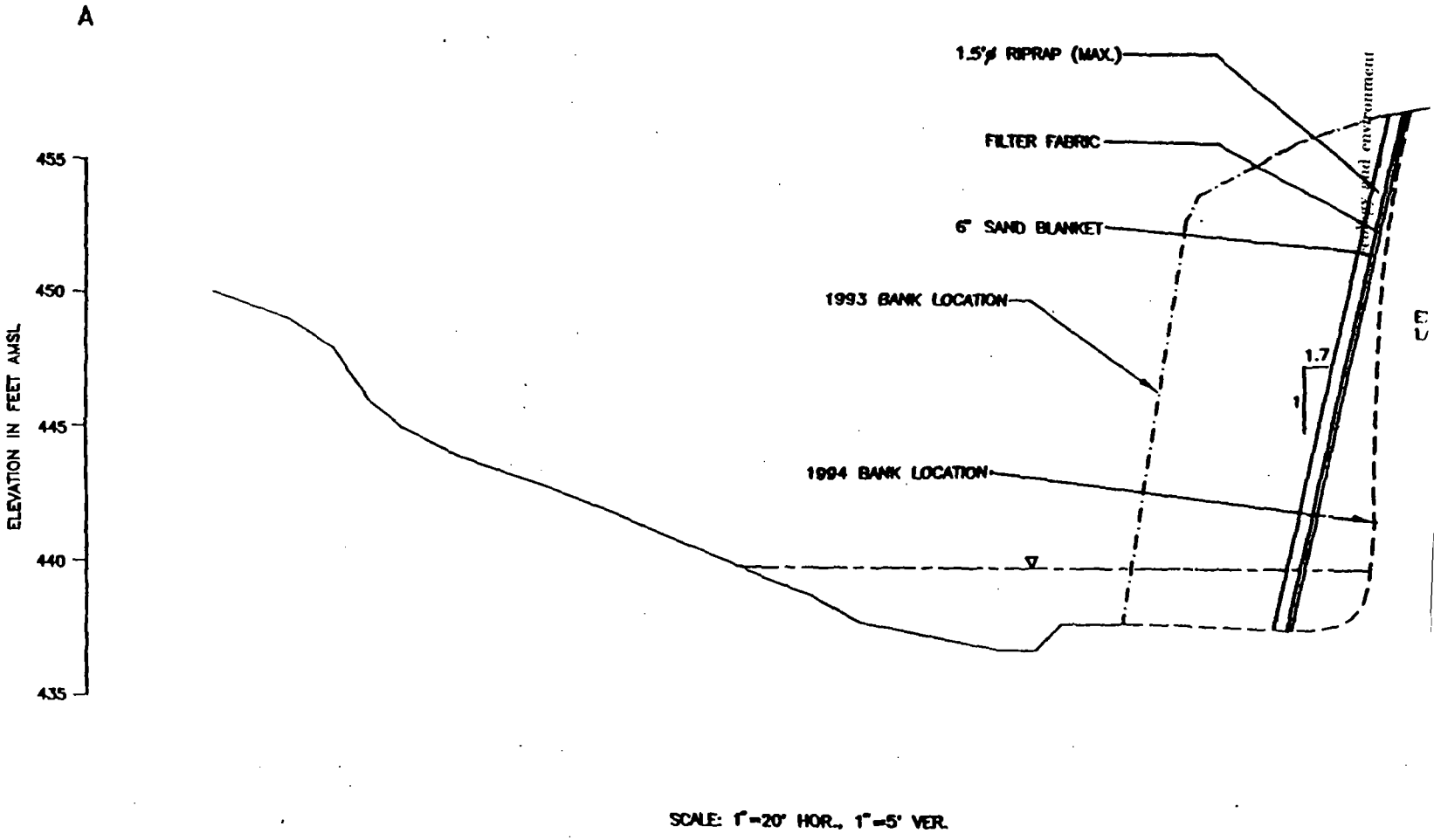
figure 4.1
DETAIL OF PROPOSED REPAIR
Kickapoo Creek Bank Repair

CRA



SURVEY.

figure 4.2
PROPOSED REPAIR
Kickapoo Creek Bank Repair



SCALE: 1"=20' HOR., 1"=5' VER.

through the end of the construction season. Because of the need to dewater the toe of the riprap, construction will be exceedingly difficult if average flow depths exceed 4 feet.

The tentative schedule for the repair work is as follows:

• Securing of permits	August 15, 1994
• Award of contract	2 weeks after securing permits (Assuming timely approval)
• Initiation of construction	2 weeks after award of contract
• Completion of construction	1 month after initiation of construction
• Final Report and Certification	1 month after completion of construction

These dates are estimates, the actual schedule will depend on the dates that the various Agency approvals and permits are granted and the water level in Kickapoo Creek and the Illinois River.

All of Which is Respectfully Submitted,

CONESTOGA-ROVERS & ASSOCIATES

Ronald Frehner

Terrence E. Huntrods, P.E.

APPENDIX A

SLOPE STABILITY ANALYSIS

CRA
O'Hare Corporate Towers One
10400 W. Higgins Rd., Suite #103
Rosemont, Illinois 60018
(708) 299-9933

MEMO

TO: Terry Huntrods/Ron Frahner REFERENCE NO: 4310-88

FROM: Arthur Kurzydlo DATE: July 5,1994

RE: Kickapoo Creek Bank Repair - Slope Stability Analysis

The following is a description of the type of slope stability analysis performed for the above mentioned project. The evaluation of the proposed embankment was based on the very limited geologic and geotechnical data. Material parameters were assumed as follows:

Element	*Type of Material*	*Unit Weight (pcf)*	*Strength*	
			Cohesion (pcf)	*Friction Angle (deg)*
Foundation Soil	Silty Clay	130.00	2,000.00	0
Embankment Soil	Silty Clay	130.00	2,000.00	0
Refuse	Refuse	45.00	0	30

Assumptions for the foundation and embankment soils are based on Table 3.29, R. Hunt "Geotechnical Engineering Investigation Manual", McGraw-Hill, 1984, and on NAVFAC, 1972. Refuse data were supplied by Terry Huntrods.

Stability of slopes is dependent on several factors which are not easy to classify. Most of those factors can be grouped into two categories; geomorphological and internal. Geomorphological factors include topography of the surroundings, geometry of slope, distribution of discontinuities and stratification. Among internal factors most important are: mechanical properties of the soil, state of stress and, surface and underground water. Two generally accepted approaches are utilized for the analysis of slope stability - the total stress analysis and the effective stress analysis. The total stress analysis is a short term or end-of-construction type analysis which utilizes the undrained shear strength parameters of the soil. In an effective stress analysis the effective strength parameters are used and the pore pressure must be specified.

The analysis of slopes has a very long history starting with Coulomb who introduced a concept of shear resistance of the soil in 1776. Since then several methods and approaches were introduced. For the simplicity reason only two methods were utilized

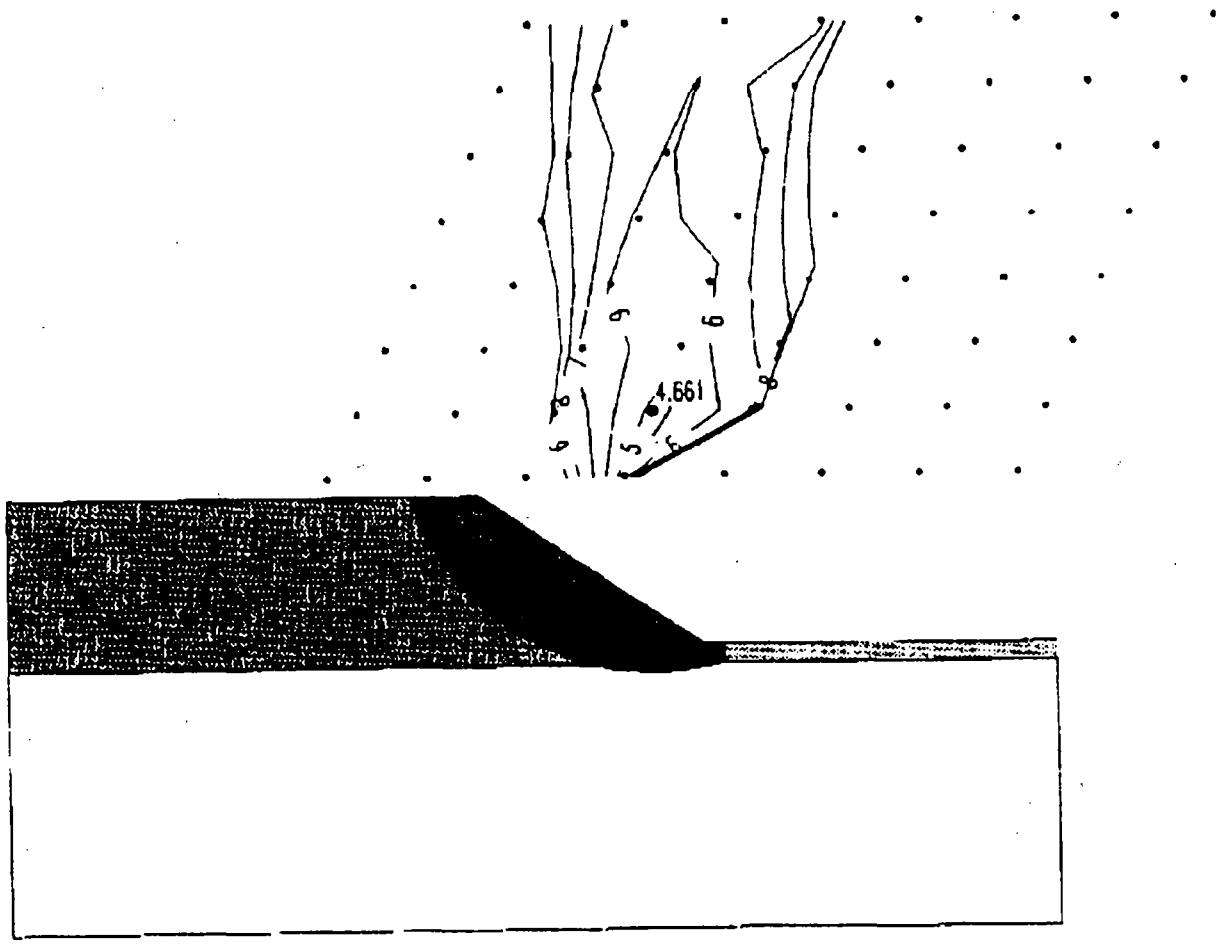
for this project, Swedish method and Janbu method. The Ordinary or Swedish or Fellenius method is a method of slices. Janbu's method for the analysis of circular and non-circular slip surfaces is a sliding block method.

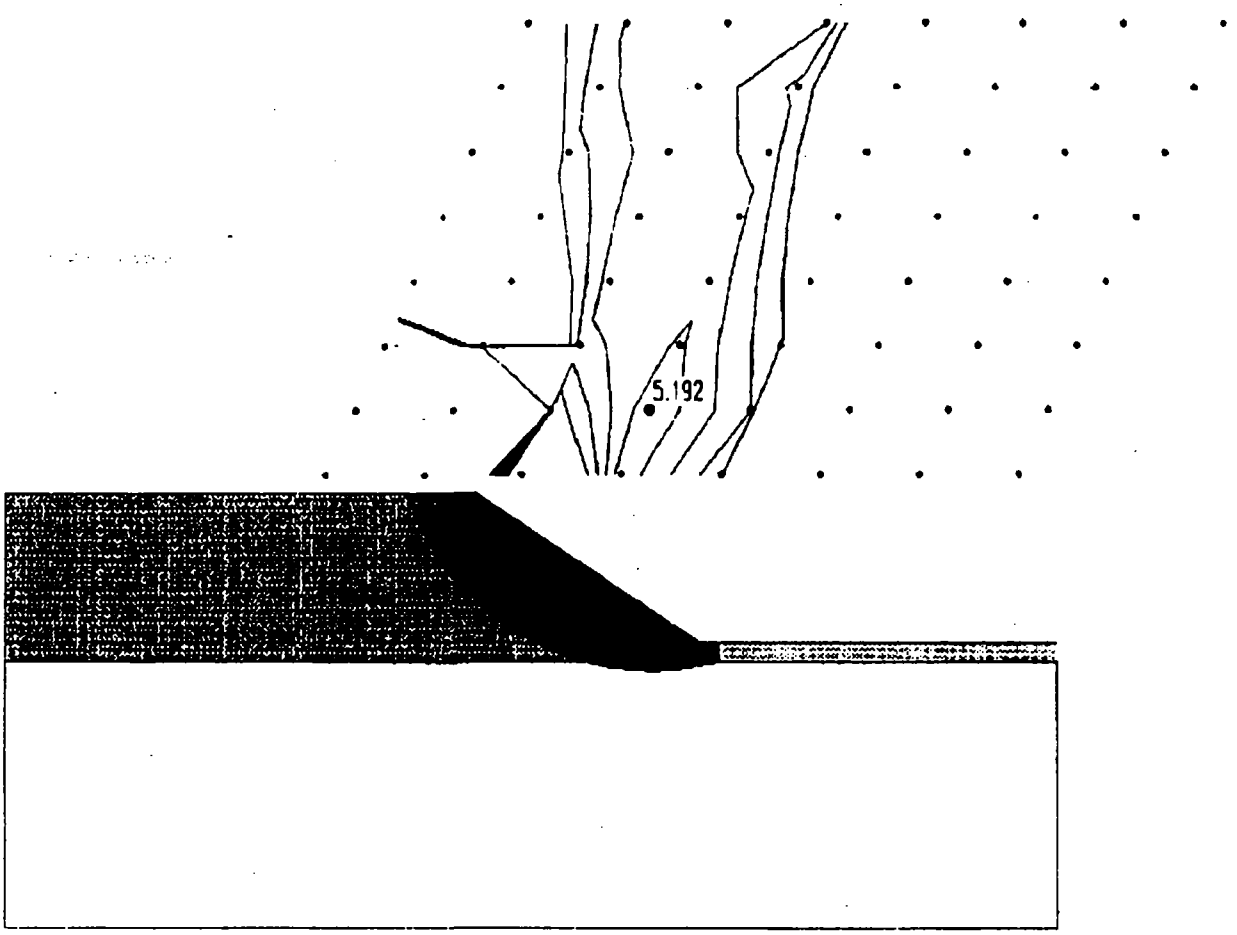
In general, slope failure occurs in on of the following modes: slope failure or base failure. Slope failure means that the surface of sliding intersects the slope at or above its toe, and it can be referred to as localized failure. When the failure occurs in such a way that the surface of sliding passes below the toe of the slope the failure is global.

Both types of analysis, total and effective, also two methods of analysis and modes of failure, local and global were checked for this project. The lowest factors of safety obtained are shown below.

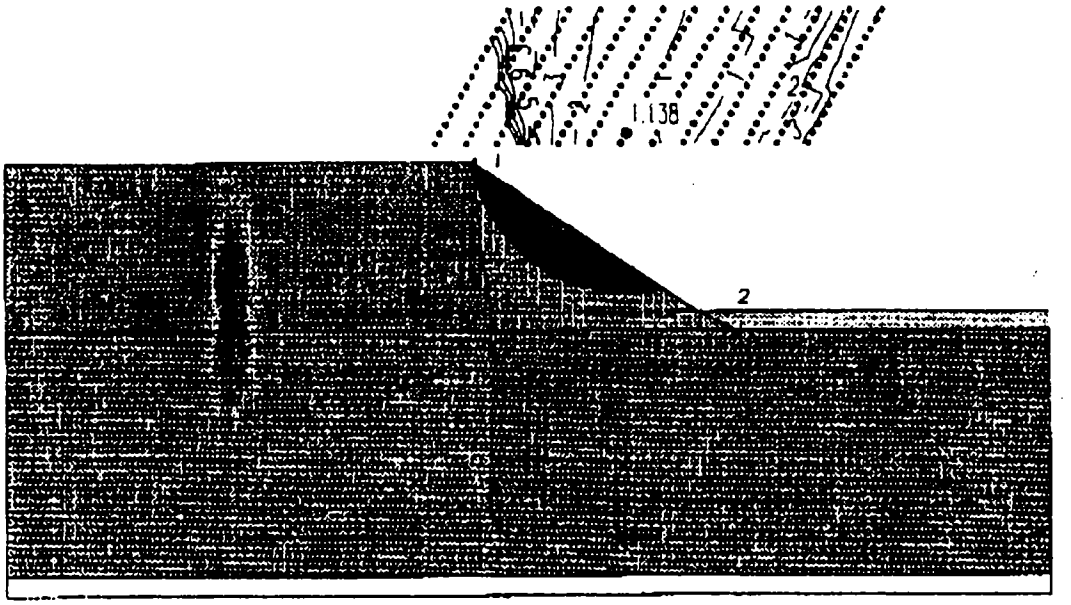
Type of Analysis	*Mode of Failure*	*Method*	*Factor of Safety*
Total	Global failure	Janbu	4.6
		Swedish	5.1
Effective	Local failure	Janbu	1.1
		Swedish	1.2

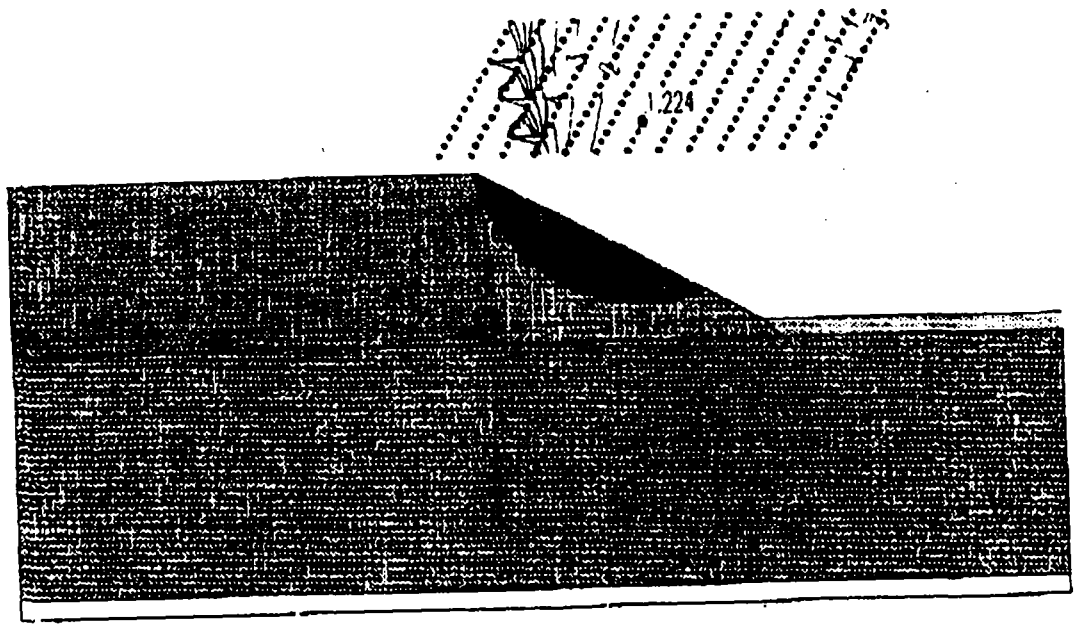
Enclosed are printouts from the SLOPE/W software utilized.


4.661
JANBU



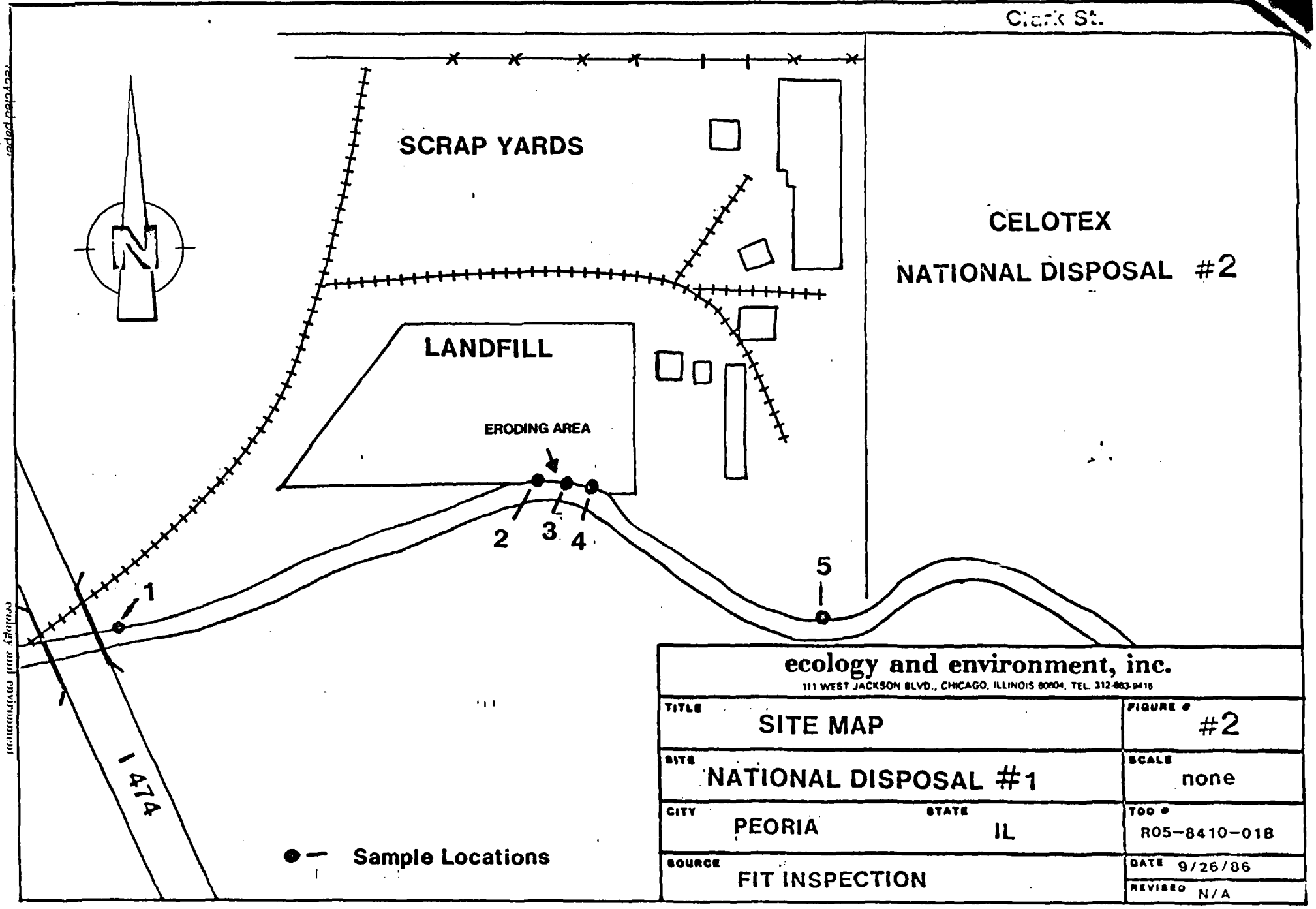
ORDINARY


1.138
2


224

APPENDIX C

1986 SSI SAMPLE LOCATIONS AND ANALYTICAL RESULTS



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ecology and environment

ecology and environment, inc.
111 WEST JACKSON BLVD., CHICAGO, ILLINOIS 60604, TEL. 312-663-9415

TITLE: SITE MAP	FIGURE #: #2
SITE: NATIONAL DISPOSAL #1	SCALE: none
CITY: PEORIA STATE: IL	TDD #: R05-8410-01B
SOURCE: FIT INSPECTION	DATE: 9/26/86
	REVISED: N/A

COMPOUND	IIC	MEG466	MEG467	MEG468	MEG469	MEG470						
	OTC	EE440	EE441	EE442	EE443	EE444						
	SAMPLE	S-1	S-2	S-3	S-4	S-5						
chloromethane												
bromomethane												
vinyl chloride												
chloroethane												
methylene chloride		11 B	8 B	16 B	21 B	9 B						
acetone		120 B	71 B	190 B	93 B	95 B						
carbon disulfide												
1,1-dichloroethene												
1,1-dichloroethane												
trans-1,2,-dichloroethene												
chloroform												
1,2-dichloroethane												
2-butanone		9 BJ	28 B	10 B	20 B	22 B						
1,1,1-trichloroethane												
carbon tetrachloride												
vinyl acetate												
bromodichloromethane												
1,1,2,2-tetrachloroethane												
1,2-dichloropropane												
trans-1,3-dichloropropene												
trichloroethene												
dibromochloromethane												
1,1,2-trichloroethane												
benzene												
cis-1,3-dichloropropene												
2-chloroethylvinylether												
bromoform												
2-hexanone												
4-methyl-2-pentanone						7 BJ						
tetrachloroethene												
toluene												
chlorobenzene												
ethylbenzene												
styrene												
total xylenes												
N-nitrosodimethylamine												
phenol												
aniline												
bis(2-chloroethyl)ether												
2-chlorophenol												
1,3-dichlorobenzene												
1,4-dichlorobenzene												
benzyl alcohol												
1,2-dichlorobenzene												
2-methylphenol												
bis(2-chloroisopropyl)ether												
4-methylphenol												
N-nitroso-di-n-propylamine												
hexachloroethane												
nitrobenzene												
isophrone												
2-nitrophenol												
2,4-dimethylphenol												
benzoic acid			180 J									
bis(2-chloroethoxy)methane												
2,4-dichlorophenol												
1,2,4-trichlorobenzene												
napthalene												
4-chloroaniline												
hexachlorobutadiene												
4-chloro-3-methylphenol												
2-methylnapthalene												
hexachlorocyclopentadiene												
2,4,6-trichlorophenol												
2,4,5-trichlorophenol												
2-chloronaphthalene												
2-nitroaniline												
dimethyl phthalate												
acenapthylene												
3-nitroaniline												
acenaphthene												
2,4-dinitrophenol												
4-nitrophenol												
dibenzofurnan												
2,4-dinitrotoluene												
2,6-dinitrotoluene												
diethylphthalate												
4-chlorophenyl-phenylether												
flourene												
4-nitroaniline												
4,6-dinitro-2-methylphenol												
N-nitrosodiphenylamine												
4-bromophenyl-phenylether												
hexachlorobenzene												

STATE Illinois SITE National Disposal #1 TDD R05-8410-01B PAGE 1 OF 2, SET # 1

	ITC	MEG466	MEG467	MEG468	MEG469	MEG470						
	OTC	EE440	EE441	EE442	EE443	EE444						
	SAMPLE	S-1	S-2	S-3	S-4	S-5						
COMPOUND												
pentachlorophenol												
phenanthrene				96 J	180 J							
anthracene												
di-n-butylphthalate		22000 BJ	150 BJ	120 BJ	120 BJ	4300 BJ						
fluoranthene				150 J	320 J							
benzidine				270 J								
pyrene					500 J							
butylbenzylphthalate												
3,3'-dichlorobenzidine												
benzo(a)anthracene												
bis(2-ethylhexyl)phthlate		530000 B	85 BJ		250 BJ	130000 B						
chrysene												
di-n-octyl phthlate												
benzo(b&k)fluoranthene												
benzo(a)pyrene					130 J							
indeno(1,2,3-cd)pyrene												
dibenzo(a,h)anthracene												
benzo(g,h,i)perylene												
alpha-BHC												
beta-BHC												
delta-BHC												
gamma-BHC(lindane)												
heptachlor												
aldrin												
heptachlor epoxide												
endosulfan I												
dieldrin												
4,4'-DDE												
endrin												
endosulfan II												
4,4'-DDD												
endrin aldehyde												
endosulfan sulfate												
4,4'-DDT												
methoxychlor												
endrin ketone												
chlorodane												
toxaphene												
Aroclor-1016												
Aroclor-1221												
Aroclor-1232												
Aroclor-1242												
Aroclor-1248												
Aroclor-1254												
Aroclor-1260												
ELEMENT		mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg						
aluminum		3290	20300	18000	22000	6400						
antimony												
arsenic		[3]	[6]	[5]	[6]	[5]						
barium		1360	1160	1850	1860	2330						
beryllium												
cadmium		7.3	11	3	[2]							
calcium		32200	8920	33900	28200	59600						
chromium		14	29	24	30	14						
cobalt												
copper			[14]	[12]	[11]							
iron		7150	19000	19400	22400	14000						
lead		98.6	37.7	26.3	31.6	15.3						
magnesium		11100	9710	15200	17300	14600						
manganese		328	619	623	690	480						
mercury												
nickel		[16]	26	[26]	[26]	[13]						
potassium		41000	29100	36600	45400	13000						
selenium												
silver												
sodium		45700	27800	38200	43300	15100						
thallium												
tin						[15.3]						
vanadium			[27]	[21]	[18]							
zinc		26.3	200.0	63.0	76.7	58.0						
cyanide CHECK IF ANALYZED ( )												
TENTATIVELY IDENTIFIED ORGANICS												

STATE Illinois SITE National Disposal #1 TDD R05-8410-01B PAGE 2 OF 2, SET # 1

APPENDIX D

REFERENCE DOCUMENTS

ECOLOGY AND ENVIRONMENT INC. TELECON MEMO

Date: 6-29-95
Time: 1400

With: Brent Gregory Phone: 309-671-3700
Of: Illinois American Water Co. - WATER QUALITY SPECIALIST

By: DONOVAN Robin
cc: File

E & E Project #: 273051
Site Name: National Disposal #1/
File Location: Janson L.F.

IAW serves approx 143,000 in Peoria and the surrounding area including Dr Bartonville. Sources of water are as follows

Source	Location	Quantity	Depth
Surface Water Intake	IL. River	10 mgd	-
Well 1	Dodge + Washington	2 mgd	118'
Well 3	"	2 mgd	118'
well 4	"	4 mgd	122'
well 1	Lincoln + Griswold	2 mgd	162'
well 2	"	2 mgd	162'
Seven wells outside study area		4-6 mgd	

Water from these sources is not mixed. And the company has not had problems with SDWA limits.

ECOLOGY AND ENVIRONMENT INC.	TELECON MEMO
Date: 8-9-95 Time: 1400	With: Wayne KAhila Phone: 309-693-5460 Of: IEPA - Air Quality
By: DONOVAN cc: Robin file	E & E Project #: ZT3051 Site Name: National Disposal #1 File Location: telecon

I asked Mr. Kahila if the IBS facility has an air quality permit for its operations, he said yes, it covers the Auto-Shredder, I asked if the wire burner was still active he said no. He checked the permit # for me it is 89110029. I asked if IBS has had any violations within the last three years, he said no —

Donovan Robin

ECOLOGY AND ENVIRONMENT INC.	TELECON MEMO
Date: 8-9-95 Time: 1007	With: James Jones Phone: 309-693-5460 Of: IEPA-DLPC
By: Donovan cc: Robin file	E & E Project #: 2T3051 Site Name: NAHL DSRL #1 File Location: ~~Telecom~~.

I asked Mr. Jones about progress at the NDI site, he informed me that the "orphaned property" was remediated by the Clarke Land Co. completed in July. He informed me that the IBS ~~operat~~ operation covers approx 80 acres with the front facility fenced. he is not sure if the rear is fenced. IEPA has not pursued any further action related to the PCB hit in 1981, to the best of his knowlage. He is not aware of any monitoring wells at the site. ND2 is not being remediated at this time, he is not aware of problems at that site. He advised me to call Rob Rost at IBS for more info.

Donovan Robertson

ECOLOGY AND ENVIRONMENT INC. TELECON MEMO

Date: August 11, 1995 Time: 1030	With: Rob Roth Phone: 708·615·1020 Of: IBS
By: Donovan. Robin cc: File	E & E Project #: 273051 Site Name: National Disposal #1 File Location: telecon

Mr. Roth explained that IBS does not generate hazardous waste and does not accept haz. materials at the site. Shredder waste is disposed off site by Waste Management, Inc. and is tested for TCLP prior to disposal. Approximately 68 persons work on site. He informed me that runoff is collected in city sewers and advised me to call Mr. Robert Sherman at 708-65-1020 with any further environmental questions. —

Donovan Robin

ECOLOGY AND ENVIRONMENT INC. TELECON MEMO

Date: August 11, 1995
Time: 1430

With: Rodger Sherman
Of: IBS
Phone: 708.615.1020

By: DONOVAN Robin
cc: File

E & E Project #: 2T3051
Site Name: National Disposal #1
File Location: telecon

I asked Mr. Sherman if IBS processes transformers, he said no, and explained that IBS purchased the property from I. Borke and Sons in 1982 and has not accepted transformers since that time. We also discussed runoff. he explained that drainage at the site is and always has been "NATURAL" and generally goes toward rail road tracks, or toward city sewers or other low spots on site

Donovan Robin

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